



**Consumers
Power
Company**

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Office of Inspection and Enforcement
Region III
US Nuclear Regulatory Commission
799 Roosevelt Road
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DOCKET 50-155 - LICENSE DPR-6 -
BIG ROCK POINT PLANT - SEMIANNUAL
RADIOACTIVE EFFLUENT & ENVIRONMENTAL
MONITORING REPORT

Attached is the Radioactive Effluent and Environmental Monitoring Report for the Big Rock Point Plant for the period January through June, 1979. The attached report is submitted in accordance with 10 CFR 50.36.a(2) and Technical Specification 6.9.3.

David A Bixel (Signed)

David A Bixel
Nuclear Licensing Administrator

CC: Director, Office of Nuclear Reactor Regulation
Director, Office of Inspection and Enforcement

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BIG ROCK POINT NUCLEAR POWER PLANT

RADIOACTIVE EFFLUENT RELEASE

JANUARY-JUNE 1979

7909 050 319.

This report provides information relating to radioactive effluent releases and solid radioactive waste disposal operations of the Big Rock Point Plant during the period of January through June 1979 in the format contained in plant Technical Specification 6.9.3.

1. Supplemental Information

a. Batch Releases

Information relating to batch releases of liquid and gaseous effluents is provided in Table 1.

b. Abnormal Releases

No abnormal releases of radioactive effluents to the environment occurred during the period.

2. Gaseous Effluents

Table 2a presents a summary of all gaseous radioactive effluents released during the period. Release totals for each radionuclide determined to be present in gaseous effluents are contained in Table 2b. Gaseous releases of I-133 and I-135 were determined from the ratios of the monthly short-lived halogen analyses to the weekly I-131 analyses. The maximum noble gas release rate was $1.27 \text{ E}+03 \text{ } \mu\text{Ci/second}$.

3. Liquid Effluents

→ 40,000 d/gm rate

Table 3a presents a summary of all liquid radioactive effluents released during the period. Release totals for each radionuclide determined to be present in liquid effluents are contained in Table 3b. The maximum concentration was $1.12 \text{ E}-06 \text{ } \mu\text{Ci/ml}$.

4. Solid Waste

Table 4 presents a summary of radioactive waste shipped offsite for burial during the period. Total volume of solid waste shipped offsite during the first six months of 1979 was approximately 2115 cubic feet. Shipment dates were 6-20-79 and 6-28-79.

TABLE 1

BIG ROCK POINT POWER PLANT

BATCH RELEASES (1979)

A. GASEOUS

| WASTE GAS DECAY TANKS | UNITS | FIRST QUARTER | SECOND QUARTER |
|-----------------------|---------|---------------|----------------|
| Number of Releases | | Continuous | Continuous |
| Total Release Time | Minutes | ----- | ----- |
| Maximum Release Time | Minutes | ----- | ----- |
| Average Release Time | Minutes | ----- | ----- |
| Minimum Release Time | Minutes | ----- | ----- |

B. LIQUID

| | UNITS | FIRST QUARTER | SECOND QUARTER |
|----------------------|---------|---------------|----------------|
| Number of Releases | | 22 | 13 |
| Total Release Time | Minutes | 8685 | 3045 |
| Maximum Release Time | Minutes | 1530 | 391 |
| Average Release Time | Minutes | 395 | 234 |
| Minimum Release Time | Minutes | 49 | 45 |

TABLE 2a

BIG ROCK POINT NUCLEAR POWER PLANT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1979)

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

| | UNITS | FIRST QUARTER | SECOND QUARTER |
|--|-------|------------------|-------------------|
|--|-------|------------------|-------------------|

A. FISSION & ACTIVATION GASES

| | | | |
|---|--------------------|----------|----------|
| 1. Total release | Ci | 2.54E+03 | 6.73E+01 |
| 2. Average release rate for period | $\mu\text{Ci/sec}$ | 3.27E+02 | 8.56E+00 |
| 3. Percent of Technical Specification Limit | % | 3.27E-02 | 8.56E-04 |

B. IODINES

| | | | |
|---|--------------------|----------|-------|
| 1. Total iodine-131 | Ci | 1.24E-04 | ----- |
| 2. Average release rate for period (I-131) | $\mu\text{Ci/sec}$ | 1.59E-05 | ----- |
| 3. Percent of Technical Specification Limit (I-131) | % | 1.32E-03 | ----- |

C. PARTICULATES

| | | | |
|---|--------------------|----------|----------|
| 1. Particulates with half-lives >8 days | Ci | 4.28E-04 | 1.75E-04 |
| 2. Average release rate for period | $\mu\text{Ci/sec}$ | 5.50E-05 | 2.23E-05 |
| 3. Percent of Technical Specification Limit | % | 2.98E-03 | 4.67E-04 |
| 4. Gross alpha radioactivity | Ci | 2.60E-07 | 4.38E-07 |

D. TRITIUM

| | | | |
|---|--------------------|----------|----------|
| 1. Total release | Ci | 1.05E+00 | 2.22E-01 |
| 2. Average release rate for period | $\mu\text{Ci/sec}$ | 1.35E-01 | 2.32E-02 |
| 3. Percent of Technical Specification Limit | % | 5.63E-03 | 1.18E-03 |

TABLE 2b

BIG ROCK POINT NUCLEAR POWER PLANT
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1979)
GASEOUS EFFLUENTS - ELEVATED RELEASE

| NUCLIDES RELEASED | UNITS | FIRST QUARTER | SECOND QUARTER |
|-------------------|-------|---------------|----------------|
|-------------------|-------|---------------|----------------|

1. FISSION GASES

| | | | |
|-------------|----|----------|----------|
| Xenon-138 | Ci | 6.64E+02 | 3.33E+01 |
| Krypton-87 | Ci | 1.37E+02 | 5.91E+00 |
| Krypton-88 | Ci | 8.67E+01 | 3.65E+00 |
| Krypton-85m | Ci | 8.54E+01 | 3.81E+00 |
| Xenon-135 | Ci | 1.36E+02 | 8.29E+00 |
| Xenon-133 | Ci | 2.49E+01 | 2.20E+00 |
| Xenon-143 | Ci | ----- | ----- |
| Krypton-94 | Ci | ----- | ----- |
| Krypton-93 | Ci | ----- | ----- |
| Xenon-141 | Ci | ----- | ----- |
| Krypton-92 | Ci | ----- | ----- |
| Krypton-91 | Ci | 2.29E+00 | ----- |
| Xenon-140 | Ci | 2.48E+01 | ----- |
| Krypton-90 | Ci | 1.85E+02 | <1 |
| Xenon-139 | Ci | 2.47E+02 | <1 |
| Krypton-89 | Ci | 1.68E+02 | 1.03E+00 |
| Xenon-137 | Ci | 2.67E+02 | 1.79E+00 |
| Xenon-135m | Ci | 2.84E+02 | 3.72E+00 |
| Krypton-83m | Ci | 6.95E+01 | 2.16E+00 |
| Xenon-133m | Ci | 1.87E+00 | <1 |
| Xenon-131m | Ci | <1 | <1 |

TABLE 2b (Continued)

BIG ROCK POINT NUCLEAR POWER PLANT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1979)

GASEOUS EFFLUENTS - ELEVATED RELEASE

| NUCLIDES RELEASED | UNITS | FIRST QUARTER | SECOND QUARTER |
|-------------------|-------|---------------|----------------|
|-------------------|-------|---------------|----------------|

1. FISSION GASES (Continued)

| | | | |
|------------------|----|------------|------------|
| Krypton-85 | Ci | < 1 | ----- |
| N-13 | Ci | 1.53E + 02 | ----- |
| Total for period | Ci | 2.54E + 03 | 6.73E + 01 |

2. IODINES

| | | | |
|------------------|----|------------|-------|
| Iodine-131 | Ci | 1.24E - 04 | ----- |
| Iodine-133 | Ci | 1.16E - 03 | ----- |
| Iodine-135 | Ci | 1.45E - 03 | ----- |
| Total for period | Ci | 2.73E - 03 | ----- |

3. PARTICULATES

| | | | |
|-----------------------|----|------------|------------|
| Cesium-137 | Ci | 3.88E - 05 | 7.98E - 05 |
| Barium-140 | Ci | 3.87E - 05 | ----- |
| Lanthanum-140* | Ci | 2.60E - 04 | ----- |
| Zinc-65 | Ci | 1.07E - 05 | ----- |
| Manganese-54 | Ci | 1.40E - 05 | 2.77E - 05 |
| Cobalt-60 | Ci | 9.20E - 05 | 6.33E - 05 |
| Neptunium-239* | Ci | 5.36E - 06 | ----- |
| Bromine-82* | Ci | 2.74E - 04 | ----- |
| Net Unidentified Beta | Ci | 2.34E - 04 | 4.21E - 06 |
| Total for period | Ci | 9.68E - 04 | 1.75E - 04 |

*half-life < 8 days

TABLE 3a

BIG ROCK POINT NUCLEAR POWER PLANT

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1979)

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

| | UNITS | FIRST QUARTER | SECOND QUARTER |
|--|-------|------------------|-------------------|
|--|-------|------------------|-------------------|

A. FISSION AND ACTIVATION PRODUCTS

| | | | |
|--|--------|----------|-----------|
| 1. Total release (not including tritium, gases, alpha) | Ci | 3.52E-01 | 2.21E-01 |
| 2. Average diluted concentration during period | µCi/ml | 1.82E-08 | 2.08E-08 |
| 3. Percent of applicable limit | % | 1.86E-01 | 3.28E-01* |

B. TRITIUM

| | | | |
|--|--------|----------|------------|
| 1. Total release | Ci | 3.37E+00 | 1.47E+00** |
| 2. Average diluted concentration during period | µCi/ml | 1.75E-07 | 1.39E-07 |
| 3. Percent of applicable limit | % | 5.82E-03 | 4.62E-03 |

C. DISSOLVED AND ENTRAINED GASES

| | | | |
|---|--------|----------|-------|
| 1. Total release | Ci | 4.97E-04 | ----- |
| 2. Average diluted concentration during period | µCi/ml | 2.58E-11 | ----- |
| 3. Percent of applicable limit Modified Liquid Waste System only | % | 8.60E-04 | ----- |

D. GROSS ALPHA RADIOACTIVITY

| | | | |
|------------------|----|----------|----------|
| 1. Total release | Ci | 9.50E-06 | 2.39E-06 |
|------------------|----|----------|----------|

| | | | |
|---|--------|----------|----------|
| E. VOLUME OF WASTE RELEASED (PRIOR TO DILUTION) | Liters | 3.83E+05 | 2.35E+05 |
|---|--------|----------|----------|

| | | | |
|--|--------|----------|----------|
| F. VOLUME OF DILUTION WATER USED DURING PERIOD | Liters | 1.93E+10 | 1.06E+10 |
|--|--------|----------|----------|

*The second quarter percent of applicable limit is conservative.
The May and June Strontium 89/90 analysis result was not available in time for inclusion in this report.

*The average tritium concentration over the six month period was used to calculate the May tritium release.

TABLE 3b

BIG ROCK POINT NUCLEAR POWER PLANT

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT (1979)

LIQUID EFFLUENTS

| NUCLIDES RELEASED | UNITS | FIRST QUARTER | SECOND QUARTER |
|--------------------------|-------|---------------|----------------|
| Lanthanum-140 | Ci | 1.63E-04 | ----- |
| Cesium-134 | Ci | 1.74E-02 | 1.70E-02 |
| Cesium-137 | Ci | 1.77E-01 | 1.41E-01 |
| Iodine-133 | Ci | 2.82E-04 | ----- |
| Cobalt-58 | Ci | 1.70E-03 | ----- |
| Cobalt-60 | Ci | 4.27E-02 | 1.75E-02 |
| Manganese-54 | Ci | 3.12E-02 | 2.22E-03 |
| Chromium-51 | Ci | 5.77E-03 | ----- |
| Iron-59 | Ci | 5.01E-03 | ----- |
| Neptunium-239 | Ci | 1.27E-03 | ----- |
| Antimony-124 | Ci | 4.44E-03 | ----- |
| Zinc-65 | Ci | 9.28E-04 | ----- |
| Strontium-89 | Ci | 3.40E-04 | 5.17E-05* |
| Strontium-90 | Ci | 4.60E-04 | 2.28E-04* |
| Net Unidentified Beta | Ci | 6.34E-02 | 4.27E-02 |
| Total for Period (Above) | Ci | 3.52E-01 | 2.21E-01 |
| | | | |
| Xenon-133 | Ci | 4.97E-04 | ----- |

*The May and June Strontium 89/90 analysis result was not available in time for inclusion in this report.

TABLE 4
 BIG ROCK POINT NUCLEAR POWER PLANT
 EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1979)
 SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (NOT IRRADIATED FUEL)

| 1. Type of Waste | Units | FIRST SIX MONTHS |
|--|----------------------|------------------------|
| a. Spent resins, filter sludges, evaporator bottoms, etc. | m ³ Ci | ----- ----- |
| b. Dry compressible waste, contaminated equipment, etc. | m ³ Ci | 5.99E+01 2.07E+00 |
| c. Irradiated components, control rods, etc. | m ³ Ci | ----- ----- |
| d. Other (describe) | m ³ Ci | ----- ----- |

2. Solid Waste Disposition

| <u>Number of Shipments</u> | <u>Mode of Transportation</u> | <u>Destination License Number</u> |
|----------------------------|-------------------------------|---|
| 2 | Truck | Nuclear Engineering Co Richland, Washington WN-1019-2 |

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

| <u>Number of Shipments</u> | <u>Mode of Transportation</u> | <u>Destination</u> |
|----------------------------|-------------------------------|--------------------|
| None | ---- | ---- |